REMARKS

The Examiner has continued to reject claims 1 through 8 as anticipated by or obvious over Saari et al. U.S. 6,921,026.

Applicant has amended claims 1-8 to even more particularly point out and distinctly claim the invention. Before considering the rejection in detail it may be helpful to briefly review the invention as set forth in the claims as now presented.

Absorbing oxygen in connection with products that require a low moisture environment creates a conflict. Oxygen absorbers require moisture to function while this moisture may itself be detrimental to the products the oxygen absorber is protecting. It is a goal of this invention to provide an oxygen absorbing composition that makes sufficient moisture available to an oxygen reducing agent for it to effectively absorb oxygen while preventing that moisture from increasing the humidity in the product being protected. The invention does this by providing a solution of water, a humectant salt, and an electrolyte salt, the solution characterized by a water activity below 0.6 (see page 4, lines 1-6), a water binding carrier mixed with the solution, and at least one oxygen scavenger blended with the mixture (page 4, lines 6-10). By providing a solution with a relatively low (less than 0.6) water activity and further by binding that solution to a water binding carrier which is blended with an oxygen reducing agent, moisture is made available to the oxygen reducing agent in sufficient amounts for it to function but the moisture made available to the environment is even further reduced by the water binding effect of the carrier. In this way, oxygen can be absorbed by an oxygen reducing agent in an environment having effective relatively humidity that would normally be too low for the oxygen absorber to function effectively while at the same time having little if any effect on the humidity of the environment. Saari, on the other hand, has the expressed and sole purpose of altering the humidity of the environment.

Saari neither shows nor suggests applicant's invention. First, while Saari is addressed to an oxygen absorber, nothing in Saari suggests that the product could be used in environments where low relative humidity is required. Furthermore, Saari doesn't appreciate, or at least does not mention the conflict created by an oxygen absorber's need for moisture and the desirability in some cases of absorbing oxygen in a low relative humidity environment.

Admittedly, Saari does disclose a list of solutes that provide a wide range of humidity levels from 6% to 90% but Saari never mentions or discusses how oxygen absorption can be efficiently carried out at the lower humidity levels. In fact, other than simply listing the compounds that can be used to obtain various relative humidity, Saari never discusses a composition having a water activity less than .7. At such levels, the humidity requirements of oxygen absorbers are easily satisfied and the issue addressed by the present invention is simply not present. In fact , as set forth in Col 5, lines 14-26, Saari intends to increase the humidity in food humidors for example. As Saari says at Col. 5, line 56, an important function is to get as much transmission of vapor as possible and practical...the higher the transmission rate, the better the performance in retaining the proper moisture level in the material being protected in the chamber. Saari's list of compounds providing various humidity levels doesn't meet applicant's claim requirement for a humectant salt and an electrolyte salt. The examiner has not provided any support for the argument that the compounds listed in Saari that produce the low humidity levels such as, lithium bromide, are humectant salts and electrolyte salts.

Furthermore, applicant's claim requires a water binding carrier mixed with the humectant salt and electrolyte salt solution. As already discussed, the water binding carrier reduces the moisture available to be released into the environment being protected while making that moisture available to the oxygen reducing agent which is blended with the mixture. Saari does discuss thickening the salt solution with vegetable gum or other hydrocolloids but the examiner has not argued and Saari provides no support for these thickeners having water binding characteristics as claimed by applicant.

In summary, notwithstanding the list of solutions with low water activity, Saari addresses an entirely different problem from applicant and does so in an entirely different way. Saari intends to increase the moisture in a package while applicant provides an oxygen absorbing composition that continues to function in low ambient humilities.

Claims 1-8 are also rejected as anticipated by or in the alternative obvious over McKedy, U.S. Patents No. 5,262,375 or 5,248,690. Referring first to McKedy '375, applicant disagrees with the Examiner's characterization of McKedy in a couple of respects. First of all, McKedy specifically describes silica gel as the water attracting and supplying (humectant) component of the composition. Even if, and the Examiner offers no evidence of this, sodium chloride could be the electrolyte, which is how McKedy describes it, or the humectant salt; clearly McKedy does not use sodium chloride as the humectant, but instead uses silica gel. The problem is that silica gel is not a salt and therefore doesn't meet the humectant salt limitation of applicant's claim. There is nothing in McKedy that suggests, even if it is possible, that the electrolyte, sodium chloride, is also a humectant salt and consequently, even if it is possible to provide sodium chloride with water bound to it so as to act as a humectant, McKedy does not show or suggest this. Applicant submits that not all sodium chloride acts as a humectant, it is necessary to bind water to the sodium chloride for it to function as a humectant and McKedy does not suggest doing this. In addition, sodium chloride does not bind water sufficiently to reduce water activity below 0.6.

Furthermore, Applicant requires that the composition comprise 10-20 wt. % of water. It is a little difficult to determine how much water is present in McKedy but a little calculation gets you there. Referring to example 3, the example relied on by the Examiner, the mixture contains 1.0 grams of electrolytically reduced iron, 0.8 grams of hydrated silica gel containing 21% moisture, and 1.5% by weight of sodium chloride. This adds up to no less than 1.8 grams of which 21% of .8 grams or .16 grams is moisture. This equals .16 ÷1.8 or less than 10 wt. % of moisture, less than applicant's claimed amount. Accordingly, McKedy does not meet either applicant's humectant salt limitation or applicant's wt. % of water limitation. Either one of these would be enough to render applicant's claimed invention patentable over McKedy '375.

Furthermore, the examiner appears to acknowledge that McKedy doesn't specifically disclose a water activity less than .6 but states that one of the formulations set forth in example 3 is deemed to have a water activity no higher than applicant's claimed maximum. Applicant respectfully submits that the examiner's argument does not make out a prima facie case of obviousness. McKedy provides a composition that is especially designed for absorbing oxygen in low temperature environments. As the examiner clearly understands, as the temperature is reduced, the relative humidity increases and consequently, plenty of moisture for supporting the oxygen absorbent reaction would be expected to be present in low temperature environments. Why therefore would anyone expect McKedy to show or suggest applicant's invention which is designed to operate in environments where the relative humidity is low. Applicant respectfully submits that more than the examiner's supposition is required to demonstrate that applicant's invention is obvious over McKedy '375.

Referring now to McKedy '690, again the silica gel is most definitely not a salt and therefore this limitation of applicant's claim is missing for the reasons already discussed. Example three of McKedy's '690 appears to have the same composition as example three of McKedy '375 and the same analysis therefore applies.

Moreover, while the Examiner states that the formulations described in McKedy '690 and McKedy '375 are "deemed" to have a water activity (i.e., equilibrium relative humidity (ERH)) that it is no higher than applicant's claimed maximum amount, the Examiner gives no basis whatsoever for this statement. No calculations are presented and the Examiner acknowledges that McKedy is silent as to the ERH or water activity of his composition.

With respect to the obviousness argument, the Examiner appears to acknowledge that silica gel, the water attracting and supplying component is not a salt but suggests that it would be obvious to use another water attracting and supplying component such as salt. The Examiner, however, does not give any basis for this statement. The portion of McKedy '375 the Examiner refers to suggests adding the electrolyte-providing salt to the silica gel not replacing the silica gel with a salt. McKedy '690 mentions activated carbon as a possible substitute water supplying component but activated carbon is also most assuredly not a salt.

Furthermore, as discussed in connection with McKedy '375, nothing in McKedy '690 suggests applicant's water activity levels.

Finally, claims 1-8 are rejected as unpatentable over Waterman, U.S. 2003/004216681. The Examiner appears to acknowledge that Waterman neither shows nor suggests applicant's carrier or applicant's humectant salt. The Examiner states however that it would have been obvious to incorporate a water-absorbing/releasing carrier material but doesn't specifically say why. Applicant respectfully submits that to the extent that Waterman relates to a kit for oxygen sensitive drugs that may well be moisture sensitive as well, the addition proposed by the Examiner would not be obvious. Moreover, Waterman actually considers this exact situation and proposes a different solution. As set forth in paragraph 19, two types of oxygen absorbers are contemplated. If the drug is moisture sensitive, an ultraviolet activated oxygen absorber can be used. If the drug is not moisture sensitive then a self-activating absorber is preferred. Self activating oxygen absorbers have water activity above 0.7. No where is there any suggestion to provide a separate oxygen-absorbing composition or to provide a humectant salt.

Moreover, as was the case with the McKedy references, the Examiner says there's no support for the examiner's position that the compositions of Waterman are deemed to inherently meet applicant's water activity limitation but there is no support whatsoever for this in Waterman and the Examiner offers no basis for his supposition.

For all of the foregoing reasons, applicant respectfully submits that the rejection is not well-supported and should be reconsidered and upon reconsideration withdrawn and the application passed on to issue.

Respectfully submitted,

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